#### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

### (19) World Intellectual Property Organization

International Bureau



## 

# (43) International Publication Date 28 July 2005 (28.07.2005)

#### **PCT**

# (10) International Publication Number WO 2005/069191 A1

(51) International Patent Classification7:

G06F 19/00

(21) International Application Number:

PCT/US2003/041668

(22) International Filing Date:

31 December 2003 (31.12.2003)

(25) Filing Language:

English

(26) Publication Language:

English

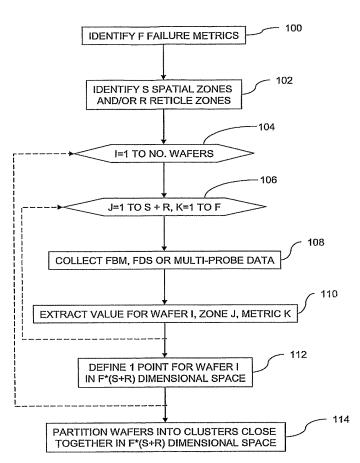
- (71) Applicant (for all designated States except US): PDF SO-LUTIONS, INC. [US/US]; Suite 700, 333 West San Carlos Street, San Jose, CA 95110 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BURCH, Richard [US/US]; 3211 St. Germain Drive, McKinney, TX 75070 (US). DORAI-RAJ, Sundardas, S. [US/US]; 2524 Presoton Road #506, Plano, TX 75093 (US). LIN, Paul

[US/US]; 3117 Avery Lane, McKinney, TX 75070 (US). HARPAVAT, Shilpi [US/US]; 6401 Landmark Trail, The Colony, TX 75056 (US). GRAVES, Spencer [US/US]; 751 Emerson Court, San Jose, CA 95126 (US). ANTONISSEN, Eric [US/US]; 1022 Golf Court, Mountain View, CA 94040 (US).

- (74) Agent: KOFFS, Steven, E.; Duane Morris LLP, One Liberty Place, Philadelphia, PA 19103-7396 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

#### (54) Title: METHOD AND SYSTEM FOR FAILURE SIGNAL DETECTION ANALYSIS



(57) Abstract: A method for analyzing a sample of wafers includes identifying F failure metrics applicable to at least one pattern on each wafer within the Z spatial and/or reticle sample. zones are identified on each wafer, where Z and F are integers. Values are provided for each failure metric, for each zone on each wafer. A point is defined for each respective wafer in an N-dimensional space, where N=F\*Z, and each point has coordinates corresponding to values of the F failure metrics in each of the Z zones of the corresponding wafer. The sample of wafers is partitioned into a plurality of clusters, so that the wafers within each clusters are close to each other in the N-dimensional space. A plurality of clusters is thus identified from the sample of wafers so that within each individual cluster, the wafers have similar defects to each other.

### WO 2005/069191 A1



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

with amended claims

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

#### Published:

- with international search report